# Nick Vinogradov

Preferred role: software engineer

E-mail : [nickkk.vin@gmail.com](mailto:nickkk.vin@gmail.com) Telephone : +4000958077 (DK) Education : M.Eng. in electronics (2012) Citizenship : Russia

Residence : Copenhagen, Denmark

# Skill Set

* Modern C++, GCC/MSVC, Python
* Machine learning: NumPy, Pandas, Keras, TensorFlow, xgboost
* Embedded Programming: C for ARM,
* FPGA Design - Vivado, Vitis, HLS,
* RTL languages: SystemVerilog, Verilog 95/2000, VHDL-93/2008, Chisel, HLS, OpenCL
* Misc: CMake, Make, bash, TCL. Maintenance of the Azure, Redmine, GitLab, Jenkins. Linux and Windows system administration

# Work Experience, 10 years of experience in complex digital system design

## [Alipes A/S](https://www.alipes.dk/), Denmark

Quantitative Developer *Sep.2020-till now*

* + Cross-platform software development in modern C++ for ﬁnancial applications
  + Design FPGA computational IP cores in Vitis and Vivado HLS
  + Implemented ANN and DecisionTrees ML Models for low-latency trading

[Widex A/S,](https://www.widex.dk/) Denmark

IC Specialist, Digital Design *Jan2019 — Aug.2020 (2 years)*

* + Design and implementation of ultra-low-power DSP blocks for next-generation hearing aid in VHDL for ASIC
  + Resource, space and power optimization
  + Collaboration with IC Phy and DSP teams
  + Providing GUI and console utilities for daily routine operation - viewers and report generation
  + Design by FDA and other medical device's certiﬁcation guidelines

[Cobham Satcom](http://comham.com/) (ex. Thrane & Thrane), Denmark

FPGA Development Engineer in Aviator S team *March 2018 — December 2018 (10 months)*

* + Design, support and maintain RTL IP Cores (AXI interface) for Zynq SoC for [Aviator S](https://www.cobham.com/communications-and-connectivity/aerospace-communications/cockpit-and-cabin-connectivity/flight-deck-connectivity/swiftbroadband-safety-systems/aviator-200s/) [Smart Aircraft](https://www.cobham.com/communications-and-connectivity/aerospace-communications/cockpit-and-cabin-connectivity/flight-deck-connectivity/swiftbroadband-safety-systems/aviator-200s/) project
  + Safety and security requirements writing and implementing, design test cases and speciﬁcation for commercial airlines avionics certiﬁcation
  + Veriﬁcation of generated netlist with TCL, generate documents speciﬁcation with Python and Latex, memory map generation and support with Python

## [Huawei Technologies](http://huawei.com/ru/), Russian Research Center, Moscow

Algorithm researcher in Nonlinear sector *September 2015 —January 2018 (2.5 years)*

* + Matlab design of DSP algorithms - ﬂoating and ﬁxed point
  + FPGA implementation of adaptive algorithms
  + Zynq and Microblaze based SoCs RTL development
  + SoC software development in Xilinx SDK - LWIP, Linux, hardware drivers

Key project: polyphase DPD for wideband signals. Matlab ﬁx-point design of nonlinear algorithms, SystemVerilog code development, veriﬁcation system, platform research with 4G base station PA.

Awards: Outstanding Contractor award 2016 of Russian R&D Center Member of Outstanding Team Award 2017

## [Digital Solutions](http://eng.dsol.ru/), SPE, LLC Moscow

FPGA designer *September 2012 — September 2015 (3 years)*

* + Full-stack electronic design from small IP cores to device production.
  + Network trafﬁc processing and analyzing system, DPI. IP cores design, CPU and PCIe interfaces, Ethernet, IP, TCP/UDP protocols in RTL, memory.
  + Reed Solomon, Viterbi and LDPC codecs implementation for ASIC and FPGA. Matlab modelling, architecture design, RTL implementation and veriﬁcation.
  + Flash and DDR memory-based systems - FIFO, stack, hash-tables, binary trees.
  + PCB design - 10+ boards design. Capture design and layout designer communication. Altium component database development and support.

## [Research Institute of Precision Instruments](http://www.niitp.ru/eng/), Moscow,

FPGA designer *February 2010 — September 2012 (2 years 8 months)*

* R&D for radio channel coding system. QAM and QPSK through AWGN and multipath channel systems modelling for wireless communication.
* Matlab's implementation of DSP algorithms and ECC codes - Reed Solomon and Viterbi. Resource and parameters optimization.
* RTL implementation and veriﬁcation for space grade FPGA’s
* MIL-1553 IP core design and implementation.
* Concatenation codes research took the prize “Youth and future of aviation and space exploration 2012” of Russian Aerospace Agency [http://mai.ru/conf/mforum/ﬁles/Pobeditely\_2012.pdf](http://mai.ru/conf/mforum/files/Pobeditely_2012.pdf)

## [Research Institute of Space Instrument](http://www.oaoniikp.ru/) Moscow,

Junior developer *June 2009 — October 2009 5 months*

* C++ algorithm Carrier-Phase measurements for NAVSTAR GPS and GLONASS.

**Education**

## M.Eng Electronics Engineering.

**Moscow Aviation Institute (National Research University) "MAI" 2006-2012**

* Faculty of Avionic systems, Communications with Mobile Objects. Specialist, Master of Engineering equivalent, 5.5 years
* Advanced specialization, 2 years, Information technology in electronic design - DSP, ARM, PCB design, FPGA, microcontrollers, ampliﬁers. Certiﬁcated, with honours

## Specialization “Advanced Machine Learning”[[cert]](https://coursera.org/share/349d8a29d736fd2cbf3bc8356a62aa75) by NRE Higher School of Economics

* [Introduction to Machine learning](https://www.coursera.org/account/accomplishments/records/7L8KV6JG2RD9) 100%
* [Introduction to deep learning.](https://www.coursera.org/account/accomplishments/records/JXCN48MRRJ64) 98.2% With Honor
* [Bayesian Methods for Machine Learning](https://www.coursera.org/account/accomplishments/certificate/4PAR629TT999) With Honor
* [Practical Reinforcement Learning](https://www.coursera.org/account/accomplishments/records/J2HHKGA298X9), With Honors
* [Addressing Large Hadron Collider Challenges by Machine Learning](https://www.coursera.org/account/accomplishments/records/K5GST2ESV8SY)
* [How to Win a Data Science Competition](https://www.coursera.org/account/accomplishments/certificate/WZQNC3E89J9W)
* [Natural Language Processing](https://www.coursera.org/account/accomplishments/certificate/9FX6B327NP7D)
* [Deep Learning in Computer vision](https://coursera.org/share/611216acb0dddffb90d68ba857b2709f)

Extra Courses

* [Advanced C++ Programming](https://www.udemy.com/certificate/UC-d2cf008a-c144-470f-a7d3-9b0c95ef159e/)
* [Introduction to OpenCL on FPGAs](https://www.coursera.org/account/accomplishments/verify/CFJFZ6V4A7ET)
* [Databases and SQL for Data Science with Python](https://www.coursera.org/account/accomplishments/verify/SX5S34NEXCMZ)
* [Circuits & Electronics: MITx 6.002x MITx](https://verify.edx.org/cert/2fc8af5dff8f4835ae3359c5de0b4885)